

# Active Balancing in a Solar Car Battery Pack



Rohan Kamatar  
April 22<sup>th</sup>, 2021

# A Little About Illini Solar Car



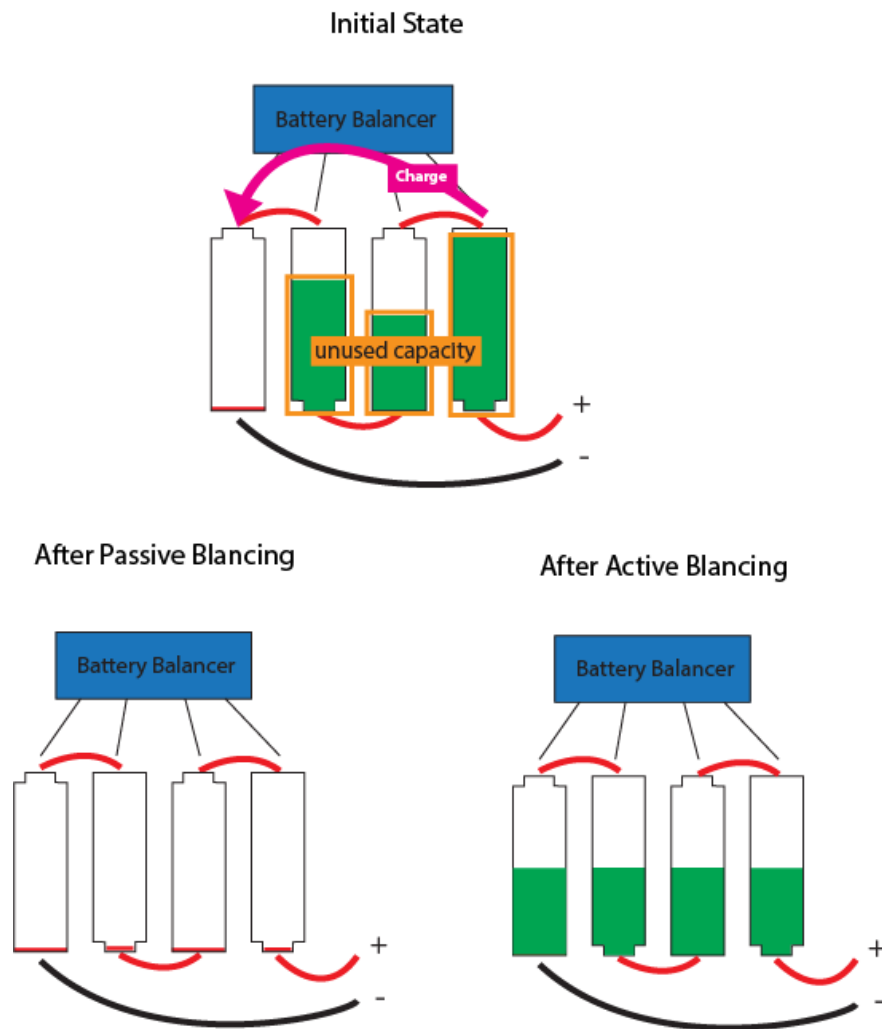
# The ISC Battery Pack

<b>Capacity</b>	5 kWh
<b>Weight</b>	20 kg
<b>Cell Type</b>	Li-Ion
<b>Nominal Voltage</b>	100.8 V



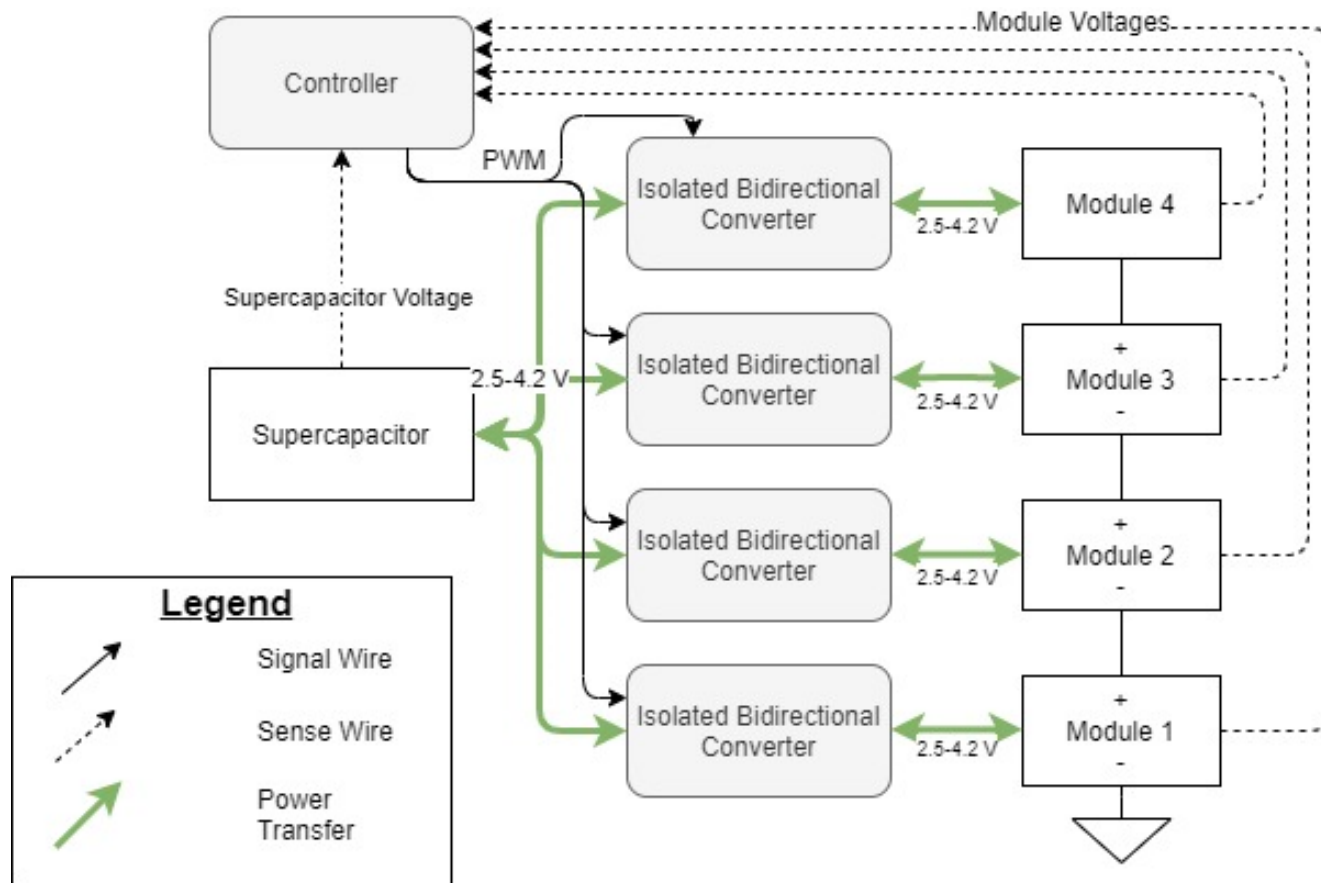
- The goal is to be able to store as much energy as possible while meeting race regulations

# The Importance of an Active Balancer



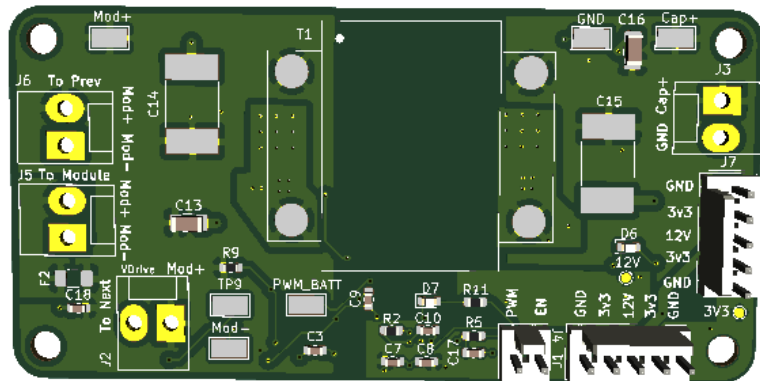
- The pack must turn off if any single battery fully discharges
- Any remaining energy in the pack is wasted
- A passive balancer discharges any extra charge so that all batteries are at the same level
- An active balancer redistributes charge to better use the pack

# Proposed Design for an Active Balancer

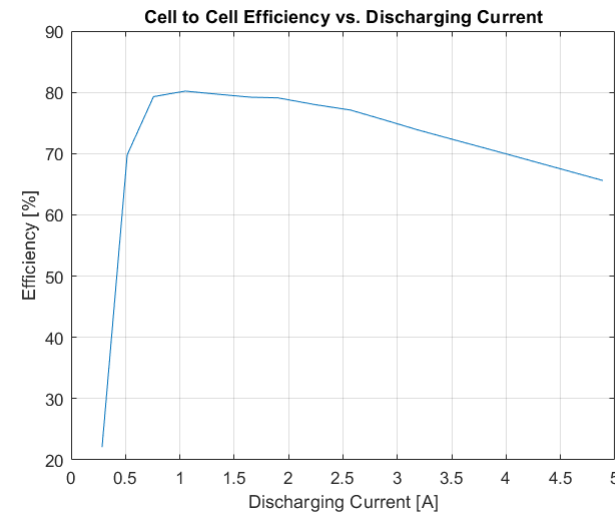


# Current Progress and Future Work

- Prototype system is in assembly and testing.
- Initial results are functional for reasonable discharge current
- Future work will look to reduce size and cost of the balancing system



DC/DC Converter PCB



Efficiency for charge transfer between two cells at 3.5 V each

# Thank You!

